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<110> Ladner, Robert Charles
Guterman, Sonia Kosow
Roberts, Bruce Lindsay
Markland, William
Arthur, Ley Charles
Rachel, Kent Baribault

<120> DIRECTED EVOLUTION OF NOVEL BINDING PROTEINS

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<141> 2001-06-29

<150> 08/993,776

<151> 1997-12-18

<150> 08/415,922

<151> 1995-04-03

<150> 08/009,319

<151> 1993-01-26

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<151> 1991-03-01

<150> 07/487,063

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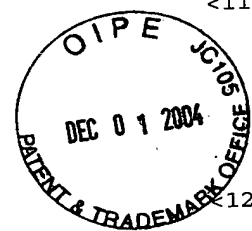
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Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys Cys
1 5 10 15

Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys
20 25

<210> 37
<211> 25
<212> PRT
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<220>
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<220>
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<222> (2)..(7)
<223> where xaa can be any naturally occurring amino acid

<220>

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<220>
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<222> (21)..(24)
<223> where xaa can be any naturally occurring amino acid

<400> 37

Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Cys
1 5 10 15

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Cys
20 25

<210> 38
<211> 26
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<220>
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<223> where xaa can be any naturally occurring amino acid

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<223> where xaa can be any naturally occurring amino acid

<220>
<221> MISC_FEATURE
<222> (21)..(25)
<223> where xaa can be any naturally occurring amino acid

<400> 38

Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Cys
1 5 10 15

Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys
20 25

<210> 39
 <211> 27
 <212> PRT
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<220>
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<220>
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 <223> where xaa can be any naturally occurring amino acid

<220>
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 <222> (17)..(19)
 <223> where xaa can be any naturally occurring amino acid

<220>
 <221> MISC_FEATURE
 <222> (21)..(26)
 <223> where xaa can be any naturally occurring amino acid

<400> 39

Cys	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Cys	Xaa	Xaa	Xaa	Xaa	Xaa	Cys	Cys
1				5				10					15	

Xaa	Xaa	Xaa	Cys	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Cys
			20					25		

<210> 40
 <211> 14
 <212> PRT
 <213> Artificial sequence

<220>
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<220>
 <221> MISC_FEATURE
 <222> (5)..(10)
 <223> where xaa can be any naturally occurring amino acid

<400> 40

His	Asn	Gly	Met	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	His	Asn	Gly	Cys
1				5					10				

<210> 41
 <211> 14

<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<220>
<221> MISC_FEATURE
<222> (5)..(10)

<400> 41

Cys Asn Gly Met Xaa Xaa Xaa Xaa Xaa Xaa His Asn Gly His
1 5 10

<210> 42
<211> 15
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<220>
<221> misc_feature
<222> (4)..(4)
<223> Xaa can be any naturally occurring amino acid

<220>
<221> MISC_FEATURE
<222> (6)..(11)
<223> where xaa can be any naturally occurring amino acid

<400> 42

His Gly Pro Xaa Met Xaa Xaa Xaa Xaa Xaa Xaa His Asn Gly Cys
1 5 10 15

<210> 43
<211> 13
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 43

Ser Asp Glu Ala Ser Gly Cys His Tyr Gly Val Leu Thr
1 5 10

<210> 44
<211> 58
<212> PRT
<213> Bos taurus

<400> 44

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys Ala
1 5 10 15

Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 45

<211> 58

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 45

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Gln Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 46

<211> 58

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 46

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Gly
1 5 10 15

Phe Phe Ser Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala

35

40

45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 47
<211> 58
<212> PRT
<213> Bos taurus

<400> 47

Arg Pro Asp Phe Cys Leu Gly Pro Pro Tyr Thr Gly Pro Cys Val Gly
1 5 10 15

Phe Phe Gln Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 48
<211> 58
<212> PRT
<213> Bos taurus

<400> 48

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 49
<211> 58
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 49

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Ile Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 50

<211> 58

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 50

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Ile Phe Lys Arg Leu Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 51

<211> 58

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 51

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Ile Ala
1 5 10 15

Phe Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala

35

40

45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 52
<211> 58
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 52

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Ile Ala
1 5 10 15

Phe Phe Gln Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 53
<211> 58
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 53

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Ile Ala
1 5 10 15

Leu Phe Lys Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Val Tyr Gly Gly Cys Met Gly Asn Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 54
<211> 58
<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 54

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Met Gly
1 5 10 15

Phe Ser Lys Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 55

<211> 58

<212> PRT

<213> Dendroaspis polylepis polylepis

<400> 55

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Met Ala
1 5 10 15

Leu Phe Lys Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 56

<211> 58

<212> PRT

<213> Dendroaspis polylepis polylepis

<400> 56

Arg Pro Asp Phe Cys Leu Glu Pro Pro Asn Thr Gly Pro Cys Phe Ala
1 5 10 15

Ile Thr Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala

35

40

45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 57

<211> 58

<212> PRT

<213> Hemachatus hemachates

<400> 57

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Met Ala
1 5 10 15

Leu Phe Gln Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 58

<211> 58

<212> PRT

<213> Naja nivea

<400> 58

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Met Ala
1 5 10 15

Ile Ser Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Ala
35 40 45

Gly Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 59

<211> 58

<212> PRT

<213> Vipera russelli

<400> 59

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Leu Tyr Gly Gly Cys Lys Gly Lys Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 60
<211> 58
<212> PRT
<213> Caretta caretta

<400> 60

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Glu Tyr Gly Gly Cys Trp Ala Lys Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 61
<211> 58
<212> PRT
<213> Helix pomania

<400> 61

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Gly Tyr Ala Gly Cys Arg Ala Lys Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 62
<211> 58

<212> PRT
<213> Dendroaspis angusticeps

<400> 62

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Glu Tyr Gly Gly Cys His Ala Glu Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 63
<211> 58
<212> PRT
<213> Dendroaspis angusticeps

<400> 63

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Leu Tyr Gly Gly Cys Trp Ala Gln Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 64
<211> 58
<212> PRT
<213> Dendroaspis polylepis

<400> 64

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Arg Tyr Gly Gly Cys Leu Ala Glu Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 65
<211> 58
<212> PRT
<213> Dendroaspis polylepis

<400> 65

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Asp Tyr Gly Gly Cys His Ala Asp Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 66
<211> 58
<212> PRT
<213> Vipera ammodytes

<400> 66

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Lys Tyr Gly Gly Cys Leu Ala His Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 67
<211> 58
<212> PRT
<213> Vipera ammodytes

<400> 67

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
 20 25 30

Phe Thr Tyr Gly Gly Cys Trp Ala Asn Gly Asn Asn Phe Lys Ser Ala
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
 50 55

<210> 68
 <211> 58
 <212> PRT
 <213> Bungarus fasciatus

<400> 68

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
 20 25 30

Phe Asn Tyr Gly Gly Cys Glu Gly Lys Gly Asn Asn Phe Lys Ser Ala
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
 50 55

<210> 69
 <211> 58
 <212> PRT
 <213> Anemonia sulcata

<400> 69

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
 1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
 20 25 30

Phe Gln Tyr Gly Gly Cys Glu Gly Tyr Gly Asn Asn Phe Lys Ser Ala
 35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
 50 55

<210> 70
 <211> 58
 <212> PRT
 <213> Homo sapiens

<400> 70

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Gln Tyr Gly Gly Cys Leu Gly Glu Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 71

<211> 58

<212> PRT

<213> Homo sapiens

<400> 71

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe His Tyr Gly Gly Cys Trp Gly Gln Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 72

<211> 58

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 72

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe His Tyr Gly Gly Cys Trp Gly Glu Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 73
<211> 58
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 73

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Lys Tyr Gly Gly Cys Trp Gly Lys Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 74
<211> 58
<212> PRT
<213> Bos taurus

<400> 74

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Lys Tyr Gly Gly Cys Trp Gly Lys Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 75
<211> 58
<212> PRT
<213> Tachypleus tridentatus

<400> 75

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Pro Tyr Gly Gly Cys Trp Ala Lys Gly Asn Asn Phe Lys Leu Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 76

<211> 58

<212> PRT

<213> Bombyx mori

<400> 76

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Lys Tyr Gly Gly Cys Trp Gly His Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 77

<211> 58

<212> PRT

<213> Bos taurus

<400> 77

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Asn Tyr Gly Gly Cys Trp Gly Lys Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 78
<211> 58
<212> PRT
<213> Bos taurus

<400> 78

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Thr Tyr Gly Gly Cys Leu Gly His Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 79
<211> 58
<212> PRT
<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 79

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Thr Tyr Gly Gly Cys Leu Gly Tyr Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 80
<211> 58
<212> PRT
<213> Bos taurus

<400> 80

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Lys Tyr Gly Gly Cys Trp Ala Glu Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 81
<211> 58
<212> PRT
<213> Bos taurus

<400> 81

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Gly Tyr Gly Gly Cys Trp Gly Glu Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 82
<211> 58
<212> PRT
<213> Bos taurus

<400> 82

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Glu Tyr Gly Gly Cys Trp Ala Asn Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 83
<211> 58
<212> PRT
<213> Bos taurus

<400> 83

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Val Tyr Gly Gly Cys His Gly Asp Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 84

<211> 58

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 84

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Met Tyr Gly Gly Cys Gln Gly Lys Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 85

<211> 58

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 85

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Tyr Tyr Gly Gly Cys Trp Ala Lys Gly Asn Asn Phe Lys Ser Ala

35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 86
<211> 58
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 86

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Met Tyr Gly Gly Cys Trp Gly Asp Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 87
<211> 58
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 87

Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys Val Ala
1 5 10 15

Met Phe Pro Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln Thr
20 25 30

Phe Thr Tyr Gly Gly Cys His Gly Asn Gly Asn Asn Phe Lys Ser Ala
35 40 45

Glu Asp Cys Met Arg Thr Cys Gly Gly Ala
50 55

<210> 88
<211> 6
<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<220>

<221> MISC_FEATURE

<222> (1)..(6)

<223> where x is an amino acid chosen from the set of [WMFYCIKDENVHQA.],
[PTAVG], or [SLR]

<400> 88

Xaa Xaa Xaa Xaa Xaa Xaa

1 5

<210> 89

<211> 24

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic oligonucleotide

<220>

<221> MISC_FEATURE

<222> (1)..(2)

<223> where n can be any nucleotide

<220>

<221> MISC_FEATURE

<222> (7)..(8)

<223> where n can be any nucleotide

<220>

<221> MISC_FEATURE

<222> (10)..(11)

<223> where n can be any nucleotide

<220>

<221> MISC_FEATURE

<222> (13)..(14)

<223> where n can be any nucleotide

<220>

<221> MISC_FEATURE

<222> (16)..(17)

<223> where n can be any nucleotide

<220>

<221> MISC_FEATURE

<222> (22)..(23)

<223> where n can be any nucleotide

<400> 89

Asn Asn Thr Thr Gly Thr Asn Asn Thr Asn Asn Gly Asn Asn Gly Asn

1 5 10 15

Asn Thr Thr Gly Thr Asn Asn Thr
20

<210> 90
<211> 13
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotides

<400> 90
ccgtcgaatc cgc 13

<210> 91
<211> 13
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 91
ggcagtttag gcg 13

<210> 92
<211> 16
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 92
cgtaacctcg tcatta 16

<210> 93
<211> 16
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 93
ccgtaggtac ctacgg 16

<210> 94
<211> 15
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 94

cacggctatt acggt	15
<210> 95	
<211> 12	
<212> DNA	
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<210> 102
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Met Gly

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<400> 108

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Thr Cys Cys Ala Ala Cys Gly Cys Thr Ala Thr
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ccttgcatcg ctttcttcca acgctat

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His His Met Cys

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His His His His

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Cys Cys His His

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Cys Cys Cys His

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5

10

15

Pro Val Thr Lys Ala
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<400> 128

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Val Pro Met Leu Ser Phe Ala Arg Pro Asp Phe Cys Leu Glu Pro Pro
20 25 30

Tyr Thr Gly Pro Cys Lys Ala Arg Ile Ile Arg Tyr Phe Tyr Asn Ala
35 40 45

Lys Ala Gly Leu Cys Gln Thr Phe Val Tyr Gly Gly Cys Arg Ala Lys
50 55 60

Arg Asn Asn Phe Lys Ser Ala Glu Asp Cys Met Arg Thr Cys Gly Gly
65 70 75 80

Ala Ala Glu Gly Asp Asp Pro Ala Lys Ala Ala Phe Asn Ser Leu Gln
85 90 95

Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val Val
100 105 110

Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe Thr Ser
115 120 125

Lys Ala Ser
130

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(.26 T, .18 C, .26 A, and .30 G)

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(.22 T, .16 C, .40 A, and .22 G)

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<400> 129
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(.22 T, .16 C, .40 A, and .22 G)

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cggccgcgcc 70

<210> 131

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<223> where n can be T or G with equal probability

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(.26 T, .18 C, .26 A, and .30 G)

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ccaaagcggc cgcgcc 76

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<220>
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<400> 132
ggcgcggccg ctttgcccg atc 23

<210> 133
<211> 58
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<220>

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58

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(.22 T, .16 C, .40 A, and .22 G)

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cga                                                                    63

<210> 135
<211> 70
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(.22 T, .16 C, .40 A, and .22 G)

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gcgcccgcga 70

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<400> 136
tcgcgggcgc tcgagacaga a 21

<210> 137
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<400> 137
gagctcagag gcttactatg aagaaatctc tggttcttaa ggctagc 47

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<210> 139
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<210> 140
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<210> 142
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<223> synthetic oligonucleotide

<400> 142
cgatgattaa ttgtcaacag ggggatgggg agtg 34

<210> 143
<211> 88
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 143
gagctccatg ggagaaaata aaatgaaaca aagcacgatc gcactcttac cgttactgtt 60
taccctgtg acaaaagccc gtccggat 88

<210> 144
<211> 22
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 144

Met Lys Gln Ser Thr Ile Ala Leu Leu Pro Leu Leu Phe Thr Pro Val
1 5 10 15

Thr Lys Ala Arg Pro Asp
20

<210> 145
<211> 210
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 145
ggatccggtg gcacttttcg gggaaatgtg cgcggaaccc ctatttgttt atttttctaa 60
atacattcaa atatgtatcc gctcatgaga caataaccct gataaatgct tcaataatat 120
tgaaaaagga agagtatgag tattcaacat ttccgtgtcg cccttattcc cttttttgcg 180
gcattttgcc ttctgtttt tgctcatccg 210

<210> 146
<211> 25
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 146

Met Ser Ile Gln His Phe Arg Val Ala Leu Ile Pro Phe Phe Ala Ala
1 5 10 15

Phe Cys Leu Pro Val Phe Ala His Pro
20 25

<210> 147
<211> 25
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 147
gtttcagcgg cgccagaata gaaag 25

<210> 148
<211> 15
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 148
tattctggcg cccgt 15

<210> 149
<211> 19
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 149
ccggacgggc gccagaata 19

<210> 150
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 150

Gly Ser Ser Ser Leu
1 5

<210> 151
<211> 13
<212> DNA
<213> Artificial sequence

<220>

<223> synthetic oligonucleotide

<220>

<221> misc_feature

<222> (5)..(9)

<223> where n can be any nucleotide

<400> 151

ggccnnnnng gcc

13

<210> 152

<211> 536

<212> DNA

<213> Bos taurus

<400> 152

eggaccgtat ccaggcttta cactttatgc ttccggctcg tataattgga attgtgagcg 60

gataacaatt cctaggagggc tcactatgaa gaaatctctg gttcttaagg cttagcgttgcc 120

tgctcgcgacc ctggtaccga tgetgtcttt tgctcgctcg gatttctgtc tcgagccgcc 180

atatactggg ccctgcaaag cgcgcatcat ccgttatctc tacaacgcta aagcaggcct 240

gtgccagacc tttgtatacg gtggttgccg tgctaagcgt aacaacttta aatcggccga 300

agattgcatg cgtacctgcg gtggcgccgc tgaaggtgat gatccggcca aagcggcctt 360

taactctctg caagcttctg ctaccgaata tateggttac gcgtgggcca tgggtggtggt 420

tatcgttggt gctaccatcg gtatcaaact gtttaagaaa tttacttcga aagcgtctta 480

atagtggagg taccagtcta agcccgcccta atgagcgggc tttttttttc ctgagg 536

<210> 153

<211> 134

<212> PRT

<213> Bos taurus

<220>

<221> MISC_FEATURE

<222> (132)..(132)

<223> where X is a stop encoded by TAA

<220>

<221> MISC_FEATURE

<222> (133)..(133)

<223> where X is a stop encoded by TGA

<220>

<221> MISC_FEATURE

<222> (134)..(134)

<223> where X is a stop encoded by TAG

<400> 153

Met Lys Lys Ser Leu Val Leu Lys Ala Ser Val Ala Val Ala Thr Leu
1 5 10 15

Val Pro Met Leu Ser Phe Ala Arg Pro Asp Phe Cys Leu Glu Pro Pro
20 25 30

Tyr Thr Gly Pro Cys Lys Ala Arg Ile Ile Arg Tyr Phe Tyr Asn Ala
35 40 45

Lys Ala Gly Leu Cys Gln Thr Phe Val Tyr Gly Gly Cys Arg Ala Lys
50 55 60

Arg Asn Asn Phe Lys Ser Ala Glu Asp Cys Met Arg Thr Cys Gly Gly
65 70 75 80

Ala Ala Glu Gly Asp Asp Pro Ala Lys Ala Ala Phe Asn Ser Leu Gln
85 90 95

Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val Val
100 105 110

Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe Thr Ser
115 120 125

Lys Ala Ser Xaa Xaa Xaa
130

<210> 154
<211> 176
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 154
ccgtccgtcg gaccgtatcc aggcctttaca ctttatgctt ccggctcgta taatgtgtgg 60
aattgtgagc ggataacaat tcctagggcc gtccttcga aagcgtctta atagttaggt 120
taccagtcta agcccgcccta atgagcgggc tttttttttc ctgaggcagg tgagcg 176

<210> 155
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<220>
<221> MISC_FEATURE
<222> (5)..(5)

<223> where x is a stop encoded by TAA

<220>

<221> MISC_FEATURE

<222> (6)..(6)

<223> where x is a stop encoded by TAG

<220>

<221> MISC_FEATURE

<222> (7)..(7)

<223> where x is a stop encoded by TGA

<400> 155

Ser Lys Ala Ser Xaa Xaa Xaa

1 5

<210> 156

<211> 89

<212> DNA

<213> Artificial sequence

<220>

<223> synthetic oligonucleotide

<400> 156

cgctcacctg cctcggaaaa aaaaaagccc gctcattagg cgggcttaga ctggtaacct 60

cactattaag acgctttcga aggagcggc 89

<210> 157

<211> 171

<212> DNA

<213> Artificial sequence

<220>

<223> synthetic oligonucleotide

<400> 157

gcaccaacgc ctaggaggct cactatgaag aaatctctgg ttcttaaggc tagcggtgct 60

gtcgcgaccc tggtagcgat gctgtctttt gctcgtccgg atttctgtct cgagccgcca 120

tatactgggc cctgcaaagc gcgcatcatc cgtacttcga aagcggctgc g 171

<210> 158

<211> 45

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 158

Met Lys Lys Ser Leu Val Leu Lys Ala Ser Val Ala Val Ala Thr Leu

1 5 10 15

Val Pro Met Leu Phe Ala Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr
 20 25 30

Thr Gly Pro Cys Lys Ala Arg Ile Ile Arg Thr Ser Lys
 35 40 45

<210> 159
 <211> 168
 <212> DNA
 <213> Artificial sequence

<220>
 <223> synthetic oligonucleotide

<400> 159
 cctcgccctg gcgcccgtga aggtgatgat ccggccaaag cggcctttaa ctctctgcaa 60
 gcttctgcta ccgaatatat cggttacgcg tgggccatgg tgggtggttat cgttggtgct 120
 accatcggtg tcaaactggt taagaaattt acttcgaaag cgtcgggc 168

<210> 160
 <211> 96
 <212> DNA
 <213> Artificial sequence

<220>
 <223> synthetic oligonucleotide

<400> 160
 cgcagccgct ttcgaagtac ggatgatgcg cgctttacgg ggcccagtat atggcggctc 60
 gagacagaaa tccggacgag caaaagacag catcgg 96

<210> 161
 <211> 99
 <212> DNA
 <213> Artificial sequence

<220>
 <223> synthetic oligonucleotide

<400> 161
 ccgtccgctg gaccgtatcc aggctttaca ctttatgctt ccggctcgta taatgtgtgg 60
 aattgtgagc ggataacaat tcctagggcc gtccttcg 99

<210> 162
 <211> 99
 <212> DNA
 <213> Artificial sequence

<220>
 <223> synthetic oligonucleotide

<400> 162
 gcaccaacgc ctaggaggct cactatgaag aaatctctgg ttcttaaggc tagcgttgct 60

gtcgcgaccc tggtagcgat gctgtctttt gctcgtccg

99

<210> 163
<211> 165
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 163
ccctgcacag cgcgcatcat ccgttatctt tacaacgcta aagcaggcct gtgccagacc 60
tttgtatacg gtgggtgccc tgctaagcgt aacaacttta aatcggccga agattgcatg 120
cgtacctgcg gtggcgccgc tgaatttact tcgaaagcgt cgccg 165

<210> 164
<211> 46
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 164

Ala Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys Gln
1 5 10 15

Thr Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser
20 25 30

Ala Glu Asp Cys Met Arg Thr Cys Gly Gly Ala Thr Ser Lys
35 40 45

<210> 165
<211> 50
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 165

Gly Ala Ala Glu Gly Asp Asp Pro Ala Lys Ala Ala Phe Asn Ser Leu
1 5 10 15

Gln Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val
20 25 30

Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe Thr
35 40 45

Ser Lys
50

<210> 166
<211> 97
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 166
cggcgacgct ttcgaagtaa attctgcggc gccaccgcag gtacgcatgc aatcttcggc 60
cgatttaaag ttgttacgct tagcacggca accaccg 97

<210> 167
<211> 93
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 167
ccctgcacag cgcgcatcat ccgttatttc tacaacgcta aagcaggcct gtgccagacc 60
tttgatacgt gtggttgccg tgctaagcgt aac 93

<210> 168
<211> 93
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 168
tcaagacgct ttcgaagtaa atttcttaaa cagtttgata ccgatggtag caccaacgat 60
aaccaccacc atggcccacg cgtaaccgat ata 93

<210> 169
<211> 100
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 169
cctcgccctg gcgccgctga aggtgatgat ccggccaaag cggcctttaa ctctctgcaa 60
gcttctgcta ccgaatatat cggttacgct tgggccatgg 100

<210> 170
<211> 130
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<220>
<221> misc_feature
<222> (22)..(22)
<223> where n can be any amino acid with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (23)..(23)
<223> where n can be any amino acid with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (24)..(24)
<223> where n can be T or G with equal probability

<220>
<221> misc_feature
<222> (28)..(28)
<223> where n can be any amino acid with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (29)..(29)
<223> where n can be any amino acid with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (30)..(30)
<223> where n can be T or G with equal probability

<220>
<221> misc_feature
<222> (52)..(52)
<223> where n can be any amino acid with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (53)..(53)
<223> where n can be any amino acid with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (54)..(54)
<223> where n can be T or G with equal probability

<220>
<221> misc_feature

<222> (58)..(58)
<223> where n can be any amino acid with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (59)..(59)
<223> where n can be any amino acid with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (60)..(60)
<223> where n can be T or G with equal probability

<220>
<221> misc_feature
<222> (73)..(73)
<223> where n can be any amino acid with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (74)..(74)
<223> where n can be any amino acid with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (75)..(75)
<223> where n can be T or G with equal probability

<220>
<221> misc_feature
<222> (115)..(115)
<223> where n can be any amino acid with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (116)..(116)
<223> where n can be any amino acid with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (117)..(117)
<223> where n can be T or G with equal probability

<400> 170
caccctggggc cctgcaaagc gnnnatacnnn cgttatttct acaacgctaa annnggtnnn 60

tgccagacct tcnnntacgg tggttgccgt gctaagcgta acaactttaa atctnnngag 120

gattgcatgc 130

<210> 171
<211> 41
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> where X is encoded by a codon where residue 1 can be (.26 T, .18 C, .26 A, and .30 G), residue 2 can be (.22 T, .16 C, .40 A, and .22 G), and residue 3 can be equal probability of T or G.

<220>
<221> MISC_FEATURE
<222> (8)..(8)
<223> where X is encoded by a codon where residue 1 can be (.26 T, .18 C, .26 A, and .30 G), residue 2 can be (.22 T, .16 C, .40 A, and .22 G), and residue 3 can be equal probability of T or G.

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> where X is encoded by a codon where residue 1 can be (.26 T, .18 C, .26 A, and .30 G), residue 2 can be (.22 T, .16 C, .40 A, and .22 G), and residue 3 can be equal probability of T or G.

<220>
<221> MISC_FEATURE
<222> (18)..(18)
<223> where X is encoded by a codon where residue 1 can be (.26 T, .18 C, .26 A, and .30 G), residue 2 can be (.22 T, .16 C, .40 A, and .22 G), and residue 3 can be equal probability of T or G.

<220>
<221> MISC_FEATURE
<222> (23)..(23)
<223> where X is encoded by a codon where residue 1 can be (.26 T, .18 C, .26 A, and .30 G), residue 2 can be (.22 T, .16 C, .40 A, and .22 G), and residue 3 can be equal probability of T or G.

<220>
<221> MISC_FEATURE
<222> (37)..(37)
<223> where X is encoded by a codon where residue 1 can be (.26 T, .18 C, .26 A, and .30 G), residue 2 can be (.22 T, .16 C, .40 A, and .22 G), and residue 3 can be equal probability of T or G.

<400> 171

Gly Pro Cys Lys Ala Xaa Ile Xaa Arg Tyr Phe Tyr Asn Ala Lys Xaa
1 5 10 15

Gly Xaa Cys Gln Thr Phe Xaa Tyr Gly Gly Cys Arg Ala Lys Arg Asn
20 25 30

Asn Phe Lys Ser Xaa Glu Asp Cys Met
35 40

<210> 172
<211> 72

<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<220>
<221> misc_feature
<222> (22)..(22)
<223> where n can be any nucleotide with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (23)..(23)
<223> where n can be any nucleotide with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (24)..(24)
<223> where n has an equal probability of being T or G

<220>
<221> misc_feature
<222> (28)..(28)
<223> where n can be any nucleotide with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (29)..(29)
<223> where n can be any nucleotide with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (30)..(30)
<223> where n has an equal probability of being T or G

<220>
<221> misc_feature
<222> (52)..(52)
<223> where n can be any nucleotide with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (53)..(53)
<223> where n can be any nucleotide with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (54)..(54)
<223> where n has an equal probability of being T or G

<220>
<221> misc_feature
<222> (58)..(58)
<223> where n can be any nucleotide with the following probabilities:

(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (59)..(59)
<223> where n can be any nucleotide with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (60)..(60)
<223> where n has an equal probability of being T or G

<400> 172
caccttgggc cctgcaaagc gnnnatacnnn cgttatttct acaacgctaa annnggtnnn 60
tgccagacct tc 72

<210> 173
<211> 78
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<220>
<221> misc_feature
<222> (22)..(22)
<223> where n is a nucleotide with equal probability of being C or A

<220>
<221> misc_feature
<222> (23)..(23)
<223> where n is a nucleotide complementary to a nucleotide that can be
any nucleotide with the following probabilities: (.22 T, .16 C,
.40 A, and .22 G)

<220>
<221> misc_feature
<222> (24)..(24)
<223> where n is a nucleotide complementary to a nucleotide that can be
any nucleotide with the following probabilities: (.26 T, .18 C,
.26 A, and .30 G)

<220>
<221> misc_feature
<222> (64)..(64)
<223> where n is a nucleotide with equal probability of being C or A

<220>
<221> misc_feature
<222> (65)..(65)
<223> where n is a nucleotide complementary to a nucleotide that can be
any nucleotide with the following probabilities: (.22 T, .16 C,
.40 A, and .22 G)

<220>
<221> misc_feature
<222> (66)..(66)

<223> where n is a nucleotide complementary to a nucleotide that can be any nucleotide with the following probabilities: (.26 T, .18 C, .26 A, and .30 G)

<400> 173
ccaccacgc atgcaatcct cnnncgattt aaagttgtta cgcttagcac ggcaaccacc 60
gtannngaag gtctggca 78

<210> 174
<211> 159
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 174
ctcgagccgc catatactgg gccctgcaaa gcggatatcc agcgttattt ctacaacgct 60
aaagaggggcc tgtgccagac cttttcgtac ggtgggtgcc gtgctaagcg taacaacttt 120
aaatcgtggg aagattgcat gcgtacctgc ggtggcgcc 159

<210> 175
<211> 53
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 175

Leu Glu Pro Pro Tyr Thr Gly Pro Cys Lys Ala Asp Ile Gln Arg Tyr
1 5 10 15

Phe Tyr Asn Ala Lys Glu Gly Leu Cys Gln Thr Phe Ser Tyr Gly Gly
20 25 30

Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Trp Glu Asp Cys Met Arg
35 40 45

Thr Cys Gly Gly Ala
50

<210> 176
<211> 132
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<220>

<221> misc_feature
<222> (18)..(18)
<223> where n has an equal probability of being C or A

<220>
<221> misc_feature
<222> (19)..(19)
<223> where n has an equal probability of being G or A

<220>
<221> misc_feature
<222> (27)..(27)
<223> where n has an equal probability of being G or A

<220>
<221> misc_feature
<222> (28)..(28)
<223> where n has an equal probability of being T or A

<220>
<221> misc_feature
<222> (33)..(33)
<223> where n has an equal probability of being G or A

<220>
<221> misc_feature
<222> (34)..(34)
<223> where n has an equal probability of being G, C, or A

<220>
<221> misc_feature
<222> (35)..(35)
<223> where n has an equal probability of being G or T

<220>
<221> misc_feature
<222> (37)..(37)
<223> where n has an equal probability of being A or T

<220>
<221> misc_feature
<222> (57)..(57)
<223> where n can be any nucleotide, with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (58)..(58)
<223> where n can be any nucleotide, with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (59)..(59)
<223> where n has an equal probability of being T or G

<220>
<221> misc_feature
<222> (66)..(66)
<223> where n can be any nucleotide, with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (67)..(67)
<223> where n can be any nucleotide, with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (68)..(68)
<223> where n has an equal probability of being T or G

<220>
<221> misc_feature
<222> (69)..(69)
<223> where n can be any nucleotide, with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (70)..(70)
<223> where n can be any nucleotide, with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (71)..(71)
<223> where n has an equal probability of being T or G

<220>
<221> misc_feature
<222> (120)..(120)
<223> where n can be any nucleotide, with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (121)..(121)
<223> where n can be any nucleotide, with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (122)..(122)
<223> where n has an equal probability of being T or G

<400> 176
cggcacgcgg gccctgcnaa gcggatnnac agnnntnttt ctacaacgct aaagagnnnc 60

tgtgcnnnnn nttttcgtag ggtggttgcc gtgctaagcg taacaacttt aaatcgtggn 120

nngattgcat gc 132

<210> 177
<211> 41
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

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<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> where X is an amino acid encoded by equal probability of CAA,
      CGA, AAA or AGA

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> where X is an amino acid encoded by equal probability of AAA,
      GAA, ATA or GTA

<220>
<221> MISC_FEATURE
<222> (9)..(9)
<223> where x is an amino acid encoded by a codon where the nucleotide
      in position 1 has an equal possibility of being A or G, the
      nucleotide in position 2 has an equal possibility of being C, A,
      or G, and the nucleotide in position 3 can be T or G

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> where x is an amino acid encoded by a codon with equal
      possibility of being TTT or TAT

<220>
<221> MISC_FEATURE
<222> (17)..(17)
<223> where X is encoded by a codon where residue 1 can be (.26 T, .18
      C, .26 A, and .30 G), residue 2 can be (.22 T, .16 C, .40 A, and
      .22 G), and residue 3 can be equal probability of T or G.

<220>
<221> MISC_FEATURE
<222> (20)..(21)
<223> where X is encoded by a codon where residue 1 can be (.26 T, .18
      C, .26 A, and .30 G), residue 2 can be (.22 T, .16 C, .40 A, and
      .22 G), and residue 3 can be equal probability of T or G.

<220>
<221> MISC_FEATURE
<222> (38)..(38)
<223> where X is encoded by a codon where residue 1 can be (.26 T, .18
      C, .26 A, and .30 G), residue 2 can be (.22 T, .16 C, .40 A, and
      .22 G), and residue 3 can be equal probability of T or G.

<400> 177

Gly Pro Cys Xaa Ala Asp Xaa Gln Xaa Xaa Phe Tyr Asn Ala Lys Glu
1          5          10          15

Xaa Leu Cys Xaa Xaa Phe Ser Tyr Gly Gly Cys Arg Ala Lys Arg Asn
20          25          30

Asn Phe Lys Ser Trp Xaa Asp Cys Met
35          40

<210> 178

```

<211> 61
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<220>
<221> misc_feature
<222> (19)..(19)
<223> where n is a nucleotide with equal chance being C or A

<220>
<221> misc_feature
<222> (20)..(20)
<223> where n is a nucleotide complementary to a nucleotide having the probabilities : .22 T, .16 C, .40 A, or .22 G

<220>
<221> misc_feature
<222> (21)..(21)
<223> where n is a nucleotide complementary to a nucleotide having the probabilities : .26 T, .18 C, .26A, or .30 G

<400> 178
cgtccagcgc atgcaatcnn nccacgattt aaagttgtta cgcttagcac ggcaaccacc 60
g 61

<210> 179
<211> 94
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<220>
<221> misc_feature
<222> (18)..(18)
<223> where n has an equal probability of bein C or A

<220>
<221> misc_feature
<222> (19)..(19)
<223> where n has an equal probability of bein G or A

<220>
<221> misc_feature
<222> (27)..(27)
<223> where n has an equal probability of bein G or A

<220>
<221> misc_feature
<222> (28)..(28)
<223> where n has an equal probability of bein T or A

<220>
<221> misc_feature

<222> (33)..(33)
<223> where n has an equal probability of bein G or A

<220>
<221> misc_feature
<222> (34)..(34)
<223> where n has an equal probability of bein C, G, or A

<220>
<221> misc_feature
<222> (35)..(35)
<223> where n has an equal probability of being T or G

<220>
<221> misc_feature
<222> (37)..(37)
<223> n is a, c, g, or t

<220>
<221> misc_feature
<222> (57)..(57)
<223> where n has an equal probability of bein T or A

<220>
<221> misc_feature
<222> (57)..(57)
<223> where n can be any nucleotide with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (58)..(58)
<223> where n can be any nucleotide with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (59)..(59)
<223> where n has an equal probability of being T or G

<220>
<221> misc_feature
<222> (66)..(66)
<223> where n can be any nucleotide with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (67)..(67)
<223> where n can be any nucleotide with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (68)..(68)
<223> where n has an equal probability of being T or G

<220>
<221> misc_feature
<222> (69)..(69)
<223> n is a, c, g, or t

<220>
 <221> misc_feature
 <222> (70)..(70)
 <223> where n can be any nucleotide with the following probabilities:
 (.22 T, .16 C, .40 A, and .22 G)

<220>
 <221> misc_feature
 <222> (71)..(71)
 <223> where n has an equal probability of being T or G

<220>
 <221> misc_feature
 <222> (79)..(79)
 <223> where n can be any nucleotide with the following probabilities:
 (.26 T, .18 C, .26 A, and .30 G)

<400> 179
 cggcagcgg gccctgcnaa gcggatnnac agnnntnttt ctacaacgct aaagagnnnc 60
 tgtgcnnnnn nttttcgtac ggtggttgcc gtgc 94

<210> 180
 <211> 159
 <212> DNA
 <213> Artificial sequence

<220>
 <223> synthetic oligonucleotide

<400> 180
 ctcgagccgc catatactgg gccctgcgag gcggatgttc agaatttttt ctacaacgct 60
 aaagagtttc tgtgctctgc tttttcgtac ggtggttgcc gtgctaagcg taacaacttt 120
 aaatcgtggc aggattgcat gcgtacctgc ggtggcggc 159

<210> 181
 <211> 53
 <212> PRT
 <213> Artificial sequence

<220>
 <223> synthetic peptide

<400> 181

Leu Glu Pro Pro Tyr Thr Gly Pro Cys Glu Ala Asp Val Gln Asn Phe
 1 5 10 15

Phe Tyr Asn Ala Lys Glu Phe Leu Cys Ser Ala Phe Ser Tyr Gly Gly
 20 25 30

Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Trp Gln Asp Cys Met Arg
 35 40 45

Thr Cys Gly Gly Ala

50

<210> 182
<211> 117
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<220>
<221> misc_feature
<222> (18)..(18)
<223> where n has an equal probability of being A, C, or G

<220>
<221> misc_feature
<222> (19)..(19)
<223> where n has an equal probability of being C or A

<220>
<221> misc_feature
<222> (24)..(24)
<223> where n has an equal probability of being A, C, or G

<220>
<221> misc_feature
<222> (25)..(25)
<223> where n has an equal probability of being C or A

<220>
<221> misc_feature
<222> (42)..(42)
<223> where n can be any nucleotide with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (43)..(43)
<223> where n can be any nucleotide with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (44)..(44)
<223> where n has an equal probability of being G, or T

<220>
<221> misc_feature
<222> (55)..(55)
<223> where n has an equal probability of being A, G, or T

<220>
<221> misc_feature
<222> (56)..(56)
<223> where n has an equal probability of being G, or T

<220>
<221> misc_feature
<222> (72)..(72)

<223> where n has an equal probability of being A, C, or G

<220>
<221> misc_feature
<222> (78)..(78)
<223> where n has an equal probability of being A, C, G or T

<220>
<221> misc_feature
<222> (80)..(80)
<223> where n has an equal probability of being G, or T

<220>
<221> misc_feature
<222> (87)..(87)
<223> where n can be any nucleotide with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (88)..(88)
<223> where n can be any nucleotide with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (89)..(89)
<223> where n has an equal probability of being G, or T

<220>
<221> misc_feature
<222> (93)..(93)
<223> where n can be any nucleotide with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (94)..(94)
<223> where n can be any nucleotide with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (95)..(95)
<223> where n has an equal probability of being G, or T

<400> 182
cgagcctgct cgagccgnng tatnnggggc cctgcgaggc gnnngttcag aattntttct 60
acaacgccaa gnagtttntn tgctctnnnt ttnnttacgg tggttgccgt gctaagc 117

<210> 183
<211> 36
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<220>

<221> MISC_FEATURE
 <222> (4)..(4)
 <223> where X is an amino acid with encoded by AAG, ACG, CAG, CCG, GAG, or GCG with equal probability.

<220>
 <221> MISC_FEATURE
 <222> (6)..(6)
 <223> where X is an amino acid with encoded by AAG, ACG, CAG, CCG, GAG, or GCG with equal probability.

<220>
 <221> MISC_FEATURE
 <222> (12)..(12)
 <223> where X is an amino acid encoded by a codon where the nucleotide in position 1 has an equal possibility of being A or G, the nucleotide in position 2 has an equal possibility of being C, A, or G, and the nucleotide in position 3 can be T or G

<220>
 <221> MISC_FEATURE
 <222> (16)..(16)
 <223> where X is an amino acid encoded by TTT, TATK TGT, TAG, TGG, or TTG with equal probability.

<220>
 <221> MISC_FEATURE
 <222> (22)..(22)
 <223> where X is an amino acid encoded by AAG, CAG, or GAG with equal probability

<220>
 <221> MISC_FEATURE
 <222> (24)..(24)
 <223> where X is an amino acid encoded by TTT, TTG, ATT, ATG, CTT, CTG, GTT, or GTG with equal probability

<220>
 <221> MISC_FEATURE
 <222> (27)..(27)
 <223> where X is an amino acid encoded by a codon where the nucleotide in position 1 has an equal possibility of being A or G, the nucleotide in position 2 has an equal possibility of being C, A, or G, and the nucleotide in position 3 can be T or G

<220>
 <221> MISC_FEATURE
 <222> (29)..(29)
 <223> where X is an amino acid encoded by a codon where the nucleotide in position 1 has an equal possibility of being A or G, the nucleotide in position 2 has an equal possibility of being C, A, or G, and the nucleotide in position 3 can be T or G

<400> 183

Leu Glu Pro Xaa Tyr Xaa Gly Pro Cys Glu Ala Xaa Val Gln Asn Xaa
 1 5 10 15

Phe Tyr Asn Ala Lys Xaa Phe Xaa Cys Ser Xaa Phe Xaa Tyr Gly Gly
 20 25 30

Cys Arg Ala Lys
35

<210> 184
<211> 71
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<220>
<221> misc_feature
<222> (18)..(18)
<223> where n has an equal probability of being A, C, or G

<220>
<221> misc_feature
<222> (19)..(19)
<223> where n has an equal probability of being A or C

<220>
<221> misc_feature
<222> (24)..(24)
<223> where n has an equal probability of being A, C, or G

<220>
<221> misc_feature
<222> (25)..(25)
<223> where n has an equal probability of being A or C

<220>
<221> misc_feature
<222> (42)..(42)
<223> where n can be any nucleotide with the following probabilities:
(.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (43)..(43)
<223> where n can be any nucleotide with the following probabilities:
(.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (44)..(44)
<223> where n has an equal probability of being T or G

<220>
<221> misc_feature
<222> (55)..(55)
<223> where n has an equal probability of being A, T or G

<220>
<221> misc_feature
<222> (56)..(56)
<223> where n has an equal probability of being T or G

<400> 184

cgagcctgct cgagccgngg tatnnggggc cctgcgaggc gnnngttcag aattntttct 60

acaacgccaa g 71

<210> 185
<211> 67
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<220>
<221> misc_feature
<222> (31)..(31)
<223> where n has an equal possibility of being C or A

<220>
<221> misc_feature
<222> (32)..(32)
<223> where n is a nucleotide complimentary to a residue that can be any nucleotide with the following probabilities: (.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (33)..(33)
<223> where n is a nucleotide complimentary to a residue that can be any nucleotide with the following probabilities: (.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (37)..(37)
<223> where n has an equal possibility of being C or A

<220>
<221> misc_feature
<222> (38)..(38)
<223> where n is a nucleotide complimentary to a residue that can be any nucleotide with the following probabilities: (.22 T, .16 C, .40 A, and .22 G)

<220>
<221> misc_feature
<222> (39)..(39)
<223> where n is a nucleotide complimentary to a residue that can be any nucleotide with the following probabilities: (.26 T, .18 C, .26 A, and .30 G)

<220>
<221> misc_feature
<222> (46)..(46)
<223> where n has an equal possibility of being C or A

<220>
<221> misc_feature
<222> (48)..(48)
<223> where n has an equal possibility of being C, A, G, or T

<220>
<221> misc_feature
<222> (54)..(54)
<223> where n has an equal possibility of being T, G, or C

<400> 185
cggccagcgc ttagcacggc aaccaccgta nnnaaannna gagcananaa actncttggc 60
gttgtag 67

<210> 186
<211> 159
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 186
ctcgagccgg agtatcaggg gccctgcgag gcggctgttc agaattgggt ctacaacgct 60
aaacagttta tgtgctctct ttttcattac ggtgggtgcc gtgctaagcg taacaacttt 120
aaatcgtggc aggattgcat gcgtacctgc ggtggcgcc 159

<210> 187
<211> 53
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 187

Leu Glu Pro Glu Tyr Gln Gly Pro Cys Glu Ala Ala Val Gln Asn Trp
1 5 10 15

Phe Tyr Asn Ala Lys Gln Phe Met Cys Ser Leu Phe His Tyr Gly Gly
20 25 30

Cys Arg Ala Lys Arg Asn Asn Phe Lys Ser Trp Gln Asp Cys Met Arg
35 40 45

Thr Cys Gly Gly Ala
50

<210> 188
<211> 582
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 188

```
gaattcgagc tcggtacccg gggatcctct agagtcggct ttacacttta tgcttcgggc      60
tcgtataatg tgtggaattg tgagcgctca caattgagct cagaggctta ctatgaagaa      120
atctctgggt ctttaaggcta gcgttgctgt cgcgaccctg gtacctatgt tgccttcgc      180
tcgtccggat ttctgtctcg agccaccata cactggggccc tgcaaagcgc gcatcatccg      240
ctatttctac aatgctaaag caggcctgtg ccagaccttt gtatacgggtg gttgccgtgc      300
taagcgtaac aactttaaat cggccgaaga ttgcatgcgt acctgcgggtg gcgccgctga      360
aggtgatgat cgggccaaagg cggccttcaa ttctctgcaa gcttctgcta ccgagtatat      420
tggttacgcg tggggccatgg tgggtggttat cgttggtgct accatcgggg tcaaactggt      480
caagaagttt acttcgaagg cgtcttaatg atagggttac cagtctaagc ccgcctaatg      540
agcgggcttt ttttttatcg agacctgcag gcatgcaagc tt                        582
```

<210> 189

<211> 582

<212> DNA

<213> Artificial sequence

<220>

<223> synthetic oligonucleotide

<400> 189

```
gaattcgagc tcggtacccg gggatcctct agagtcggct ttacacttta tgcttcgggc      60
tcgtataatg tgtggaattg tgagcgctca caattgagct cagaggctta ctatgaagaa      120
atctctgggt ctttaaggcta gcgttgctgt cgcgaccctg gtacctatgt tgccttcgc      180
tcgtccggat ttctgtctcg agccaccata cactggggccc tgcaaagcgc gcatcatccg      240
ctatttctac aatgctaaag caggcctgtg ccagaccttt gtatacgggtg gttgccgtgc      300
taagcgtaac aactttaaat cggccgaaga ttgcatgcgt acctgcgggtg gcgccgctga      360
aggtgatgat cgggccaaagg cggccttcaa ttctctgcaa gcttctgcta ccgagtatat      420
tggttacgcg tggggccatgg tgggtggttat cgttggtgct accatcgggg tcaaactggt      480
caagaagttt acttcgaagg cgtcttaatg atagggttac cagtctaagc ccgcctaatg      540
agcgggcttt ttttttatcg agacctgcag gcatgcaagc tt                        582
```

<210> 190

<211> 554

<212> DNA

<213> Artificial sequence

<220>

<223> synthetic oligonucleotide

<400> 190

```
ggatcctcta gagtcggctt tacactttat gcttcgggt cgtataatgt gtggaattgt      60
```

```

gagcgctcac aattgagctc agaggcttac tatgaagaaa tctctgggtc ttaaggctag      120
cgttgctgtc gcgaccctgg tacctatggt gtccttcgct cgcccgatt tctgtctoga      180
gccaccatac actgggccct gcaaagcgcg catcatccgc tatttctaca atgctaaagc      240
aggcctgtgc cagacctttg tatacgggtg ttgccgtgct aagcgtaaca actttaaatc      300
ggccgaagat tgcattgcgt cctgcgggtg cgccgctgaa ggtgatgata cggccaaggc      360
ggccttcaat tctctgcaag cttctgctac cgagtattatt ggttacgcgt gggccatggt      420
ggtgggttatc gttggtgcta ccatcgggat caaactgttc aagaagttaa cttcgaaggc      480
gtcttaatga tagggttacc agtctaagcc cgcctaatga cgggcttttt ttttatcgag      540
acctgcaggc atgc                                                         554

```

```

<210> 191
<211> 134
<212> PRT
<213> Artificial sequence

```

```

<220>
<223> synthetic peptide

```

```

<220>
<221> MISC_FEATURE
<222> (132)..(132)
<223> where x is a stop encoded by TAA

```

```

<220>
<221> MISC_FEATURE
<222> (133)..(133)
<223> where x is a stop encoded by TGA

```

```

<220>
<221> MISC_FEATURE
<222> (134)..(134)
<223> where x is a stop encoded by TAG

```

```

<400> 191

```

```

Met Lys Lys Ser Leu Val Leu Lys Ala Ser Val Ala Val Ala Thr Leu
1           5           10           15

```

```

Val Pro Met Leu Ser Phe Ala Arg Pro Asp Phe Cys Leu Glu Pro Pro
          20           25           30

```

```

Tyr Thr Gly Pro Cys Lys Ala Arg Ile Ile Arg Tyr Phe Tyr Asn Ala
          35           40           45

```

```

Lys Ala Gly Leu Cys Gln Thr Phe Val Tyr Gly Gly Cys Arg Ala Lys
          50           55           60

```

```

Arg Asn Asn Phe Lys Ser Ala Glu Asp Cys Met Arg Thr Cys Gly Gly

```

```
<220>
<223> synthetic oligonucleotide
```

<400>	192						
ggatcctcta	gagtcggctt	tacactttat	gcttcgggct	cgtataatgt	gtggaattgt		60
gagcgctcac	aattgagctc	agaggcttac	tatgaagaaa	tctctggttc	ttaaggctag		120
cgttgctgtc	gcgaccctgg	tacctatgtt	gtccttcgct	cgtcgggatt	tctgtctcga		180
gccaccatac	actggggcct	gcaaagcgcg	catcatccgc	tatttctaca	atgctaaagc		240
aggcctgtgc	cagacctttg	tatacggtg	ttgccgtgct	aagcgtaaca	actttaaatc		300
ggccgaagat	tgcattgcgt	cctgcggtag	cgccgctgaa	ggtgatgatc	cggccaaggc		360
ggccttcaat	tctctgcaag	cttctgctac	cgagtatatt	ggttacgcgt	gggccatggt		420
ggtggttatc	gttggtgcta	ccatcgggat	caaactgttc	aagaagttta	cttcgaaggc		480
gtcttaatga	tagggttacc	agtctaagcc	cgcctaata	cgggcttttt	ttttatcgag		540
acctgcaggc	atgcgacctg	caggtcgacc	ggcatgc				577

```
<220>
<223> synthetic oligonucleotide
```

```
<220>
<221> misc_feature
<222> (4)..(10)
<223> where n can be any nucleotide
```

<400> 193
ccannnnnnn tgg 13

<210> 194
<211> 525
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 194
ggcttttacac tttatgcttc cggctcgtat aatgtgtgga attgtgagcg ctcacaattg 60
agctcagagg cttactatga agaaatctct ggttcttaag gctagcggtg ctgtcgcgac 120
cctggtacct atgttgctct tcgctcgtcc ggatttctgt ctcgagccac catacactgg 180
gccctgcaaa gcgcgcacatca tccgctatatt ctacaatgct aaagcaggcc tgtgccagac 240
ctttgtatac ggtgggttgcc gtgctaagcg taacaacttt aaatcggccg aagattgcat 300
gcgtacctgc ggtggcgccg ctgaaggtga tgatccggcc aaggcgccct tcaattctct 360
gcaagcttct gctaccgagt atattggtta cgcgtgggcc atggtggtgg ttatcgttgg 420
tgctaccatc gggatcaaac tgttcaagaa gtttacttcg aaggcgtctt aatgataggg 480
ttaccagtct aagcccgccct aatgagcggg cttttttttt atcga 525

<210> 195
<211> 68
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 195
ggcttttacac tttatgcttc cggctcgtat aatgtgtgga attgtgagcg ctcacaattg 60
agctcagg 68

<210> 196
<211> 67
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 196
aggcttacta tgaagaaatc tctggttctt aaggctagcg ttgctgtcgc gaccctggta 60
cctatgt 67

<210> 197

<211> 70
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 197
tgctcttcgc tcgtccggat ttctgtctcg agccaccata cactgggccc tgcaaagcgc 60
gcatcatccg 70

<210> 198
<211> 65
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 198
cgagcgaagg acaacatagg taccagggtc gcgacagcaa cgctagcctt aagaaccaga 60
gattt 65

<210> 199
<211> 68
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 199
cttcatagta agcctcctga gctcaattgt gagcgctcac aattccacac attatacgag 60
ccggaagc 68

<210> 200
<211> 38
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 200
ccagtctaag cccgcctaag gagcgggctt ttttttta 38

<210> 201
<211> 29
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 201

tcgataaaaa aaaagcccg ctcattaggc 29

<210> 202
<211> 69
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 202
gggcttagac tggtaaccct atcattaaga cgccttcgaa gtaaacttct tgaacagttt 60
gatcccgat 69

<210> 203
<211> 15
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 203
aggcttacta tgaag 15

<210> 204
<211> 13
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 204
tgtccttcgc tcg 13

<210> 205
<211> 15
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 205
ctatttctac aatgc 15

<210> 206
<211> 15
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 206

aacaacttta aatcg 15

<210> 207
<211> 15
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 207
ccttcaattc tctgc 15

<210> 208
<211> 13
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 208
cgttggtgct acc 13

<210> 209
<211> 13
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 209
ccagtctaag ccc 13

<210> 210
<211> 67
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 210
ctatttctac aatgctaaag caggcctgtg ccagaccttt gtatacgggtg gttgccgtgc 60

taagcgt 67

<210> 211
<211> 76
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 211

aacaacttta aatcggccga agattgcatg cgtacctgcg gtggcgccgc tgaaggtgat 60
gatccggcca aggcgg 76

<210> 212
<211> 67
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 212
ccttcaattc tctgcaagct tctgctaccg agtatattgg ttacgcgtgg gccatggtgg 60
tggttat 67

<210> 213
<211> 69
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 213
cgttggtgct accatcggga tcaaactggt caagaagttt acttcgaagg cgtcttaatg 60
atagggtta 69

<210> 214
<211> 70
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 214
gcattgtaga aatagcggat gatgcgcgct ttgcagggcc cagtgtatgg tggctcgaga 60
cagaaatccg 70

<210> 215
<211> 67
<212> DNA
<213> Artificial sequence

<220>
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<400> 215
cgatttaaag ttgttacgct tagcacggca accaccgtat acaaaggtct ggcacaggcc 60
tgcttta 67

<210> 216

<211> 76
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 216
gcagagaatt gaaggccgcc ttggccggat catcaccttc agcggcgcca ccgcaggtac 60
gcatgcaatc ttcggc 76

<210> 217
<211> 65
<212> DNA
<213> Artificial sequence

<220>
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<400> 217
ggtagcacca acgataacca ccaccatggc ccacgcgtaa ccaatatact cggtagcaga 60
agctt 65

<210> 218
<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 218
Met Lys Gln Ser Thr Ile Ala Leu Ala Leu Leu Pro Leu Leu Phe Thr
1 5 10 15
Pro Val Thr Lys Ala Arg Thr
20

<210> 219
<211> 28
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 219
Met Lys Ile Lys Thr Gly Ala Arg Ile Leu Ala Leu Ser Ala Leu Thr
1 5 10 15

Thr Met Met Phe Ser Ala Ser Ala Leu Ala Lys Ile
20 25

<210> 220
<211> 24
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic pepetide

<400> 220

Met Met Lys Arg Asn Ile Leu Ala Val Ile Val Pro Ala Leu Leu Val
1 5 10 15

Ala Gly Thr Ala Asn Ala Ala Glu
20

<210> 221
<211> 25
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 221

Met Ser Ile Gln His Phe Arg Val Ala Leu Ile Pro Phe Phe Ala Ala
1 5 10 15

Phe Cys Leu Pro Val Phe Ala His Pro
20 25

<210> 222
<211> 27
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 222

Met Met Ile Thr Leu Arg Lys Leu Pro Leu Ala Val Ala Val Ala Ala
1 5 10 15

Gly Val Met Ser Ala Gln Ala Met Ala Val Asp
20 25

<210> 223
<211> 22
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 223

Met Lys Ala Thr Lys Leu Val Leu Gly Ala Val Ile Leu Gly Ser Thr
1 5 10 15

Leu Leu Ala Gly Cys Ser
20

<210> 224

<211> 23

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 224

Met Lys Lys Leu Leu Phe Ala Ile Pro Leu Val Val Pro Phe Tyr Ser
1 5 10 15

His Ser Ala Glu Thr Val Glu
20

<210> 225

<211> 21

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 225

Met Lys Lys Leu Leu Phe Ala Ile Pro Leu Val Val Pro Phe Tyr Ser
1 5 10 15

Gly Ala Arg Pro Asp
20

<210> 226

<211> 28

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 226

Met Lys Lys Ser Leu Val Leu Lys Ala Ser Val Ala Val Ala Thr Leu
1 5 10 15

Val Pro Met Leu Ser Phe Ala Ala Glu Gly Asp Asp

20

25

<210> 227
<211> 26
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 227

Met Lys Lys Ser Leu Val Leu Lys Ala Ser Val Ala Val Ala Thr Leu
1 5 10 15

Val Pro Met Leu Ser Phe Ala Arg Pro Asp
20 25

<210> 228
<211> 28
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 228

Met Lys Lys Ser Leu Val Leu Leu Ala Ser Val Ala Val Ala Thr Leu
1 5 10 15

Val Pro Met Leu Ser Phe Ala Ala Glu Gly Asp Asp
20 25

<210> 229
<211> 1302
<212> DNA
<213> M13

<400> 229
gtgaaaaaat tattattcgc aattccttta gttgttcctt tctattctca ctccgctgaa 60
actggtgaaa gttgttttagc aaaaccccat acagaaaatt catttactaa cgtctggaaa 120
gacgacaaaa ctttagatcg ttacgctaac tatgagggtt gtctgtggaa tgctacaggc 180
gttgtagttt gtactgggtga cgaaactcag tgttacggta catgggttcc tattgggctt 240
gctatccctg aaaatgaggg tgggtggctct gaggggtggcg gttctgaggg tggcggttct 300
gaggggtggcg gtactaaacc tcctgagtac ggtgatacac ctattccggg ctatacttat 360
atcaaccctc tcgacggcac ttatccgcct ggtactgagc aaaaccccg c taatcctaata 420
ccttctcttg aggagtctca gcctcttaata actttcatgt ttcagaataa taggttccga 480
aataggcagg gggcattaac tgtttatacg ggcactgtta ctcaaggcac tgaccccggt 540

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aaaacttatt accagtacac tctgtatca tcaaaagcca tgtatgacgc ttactggaac      600
ggtaaattca gagactgcgc tttccattct ggctttaatg aggatccatt cgtttgtgaa      660
tatcaaggcc aatcgtctga cctgcctcaa cctcctgtca atgctggcgg cggtctctggt      720
ggtggttctg gtggcggctc tgagggtggt ggctctgagg gtggcgggtc tgagggtggc      780
ggctctgagg gaggcgggtc cggtggtggc tctggttccg gtgattttga ttatgaaaag      840
atggcaaacy ctaataaggg ggctatgacc gaaaatgccg atgaaaacgc gctacagtct      900
gacgctaaag gcaaacttga ttctgtcgct actgattacg gtgctgctat cgatgggttc      960
attggtgacg tttccggcct tgctaattgg aatggtgcta ctggtgattt tgctggctct 1020
aattcccaaa tggtcgaagt cggtgacggt gataattcac ctttaatgaa taatttccgt 1080
caatatttac cttccctccc tcaatcgggt gaatgtcgcc cttttgtctt tagcgctggg 1140
aaaccatatg aattttctat tgattgtgac aaaataaact tattccgtgg tgtctttgcg 1200
tttcttttat atgttgccac ctttatgtat gtattttcta cgtttgctaa catactgcgt 1260
aataaggagt cttaatcatg ccagttcttt tgggtattcc gt                        1302

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<210> 230
<211> 66
<212> DNA
<213> Artificial sequence

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<220>
<223> synthetic oligonucleotide

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<400> 230
gtgaaaaaat tattattcgc aattccttta gttgttcctt tctattctca ctccgctgaa      60
actggtt                                                                66

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<210> 231
<211> 22
<212> PRT
<213> Artificial sequence

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<220>
<223> synthetic peptide

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<400> 231

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Met Lys Lys Leu Leu Phe Ala Ile Pro Leu Val Val Pro Phe Tyr Ser
1           5           10           15

```

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His Ser Ala Glu Thr Val
20

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<210> 232
<211> 66

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<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 232
gtgaaaaaat tattattcgc aattccttta gttgttcctt tctattctgg cgccgctgaa 60
actggt 66

<210> 233
<211> 21
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 233
Met Lys Lys Leu Leu Phe Ala Ile Pro Leu Val Val Pro Phe Tyr Ser
1 5 10 15

Gly Ala Glu Thr Val
20

<210> 234
<211> 1480
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 234
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gatttctgtc tcgagcccat aactggggc ctgcaaagcg cgcacatcc gctatttcta 120
caatgctaaa gcaggcctgt gccagacctt tgtatacggg ggttgccgtg ctaagcgtaa 180
caactttaaa tcggccgaag attgcatgcg tacctgcggg ggcgccggcg ccgctgaaac 240
tggtgaaagt tgtttagcaa aaccccatat agaaaattca ttactaacg tctggaaaga 300
cgacaaaact ttagatcggt acgctaacta tgagggttgt ctgtggaatg ctacaggcgt 360
tgtagtttgt actggtgacg aaactcagtg ttacggtaca tgggttccta ttgggcttgc 420
tatccctgaa aatgaggggtg gtggctctga ggggtggcggg tctgaggggtg gcggttctga 480
gggtggcggg actaaacctc ctgagtacgg tgatacacct attccgggct atacttatat 540
caaccctctc gacggcactt atccgcctgg tactgagcaa aaccccgcta atcctaatacc 600
ttctcttgag gagtctcagc ctcttaatac tttcatgttt cagaataata ggttccgaaa 660
taggcagggg gcattaactg tttatacggg cactgttact caaggcactg accccgttaa 720

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aacttattac cagtacactc ctgtatcatc aaaagccatg tatgacgctt actggaacgg      780
taaattcaga gactgcgctt tccattctgg ctttaatgag gatccattcg tttgtgaata      840
tcaaggccaa tcgtctgacc tgccctcaacc tcctgtcaat gctggcggcg gctctggtgg      900
tggttctggt ggcggctctg aggggtggtg ctctgagggg ggcggttctg aggggtggcg      960
ctctgagggg ggcggttccg gtggtggctc tggttccggt gattttgatt atgaaaagat    1020
ggcaaacgct aataaggggg ctatgaccga aaatgccgat gaaaacgcgc tacagtctga    1080
cgctaaaggc aaacttgatt ctgtcgctac tgattacggt gctgctatcg atggtttcat    1140
tggtgacggt tccggccttg ctaatggtaa tggtgctact ggtgattttg ctggctctaa    1200
ttcccaaagt gctcaagtcg gtgacggtga taattcacct ttaatgaata atttccgtca    1260
atatttacct tccctccctc aatcggttga atgtcgccct tttgtcttta gcgctggtaa    1320
accatatgaa ttttctattg attgtgacaa aataaactta ttccgtggtg tctttgcgtt    1380
tcttttatat gttgccacct ttatgtatgt attttctacg tttgctaaca tactgcgtaa    1440
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<210> 235

<211> 77

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<220>

<221> MISC_FEATURE

<222> (77)..(77)

<223> where X is a stop encoded by TAA

<400> 235

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Met Lys Lys Leu Leu Phe Ala Ile Pro Leu Val Val Pro Phe Tyr Ser
1           5           10           15

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```

Gly Ala Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys
          20           25           30

```

```

Lys Ala Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys
          35           40           45

```

```

Gln Thr Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys
          50           55           60

```

```

Ser Ala Glu Asp Cys Met Arg Thr Cys Gly Gly Ala Xaa
65           70           75

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<210> 236
<211> 215
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 236
ggatccactc cccatccccc tgttgacaat taatcatcgg ctctgataat gtgtggaatt 60
gtgagcgctc acaattgagc tctggaggaa ataaaatgaa gaaatctctg gttcttaagg 120
ctagcgttgc tgtcgcgacc ctggtacctg tgttgctcctt cgctcgtcgg gatttctgtc 180
tcgagccacc atacactggg ccctgcaaag cgcgc 215

<210> 237
<211> 73
<212> PRT
<213> M13

<400> 237

Met Lys Lys Ser Leu Val Leu Lys Ala Ser Val Ala Val Ala Thr Leu
1 5 10 15

Val Pro Met Leu Ser Phe Ala Ala Glu Gly Asp Asp Pro Ala Lys Ala
20 25 30

Ala Phe Asn Ser Leu Gln Ala Ser Ala Thr Glu Tyr Ile Gly Tyr Ala
35 40 45

Trp Ala Met Val Val Val Ile Val Gly Ala Thr Ile Gly Ile Lys Leu
50 55 60

Phe Lys Lys Phe Thr Ser Lys Ala Ser
65 70

<210> 238
<211> 27
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 238
ggcgagggag gaggatccgg atcctcc 27

<210> 239
<211> 8
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 239

Glu Gly Gly Gly Ser Gly Ser Ser
1 5

<210> 240
<211> 130
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<220>
<221> MISC_FEATURE
<222> (128)..(128)
<223> where X is a stop encoded by TAA

<220>
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<222> (129)..(129)
<223> where X is a stop encoded by TGA

<220>
<221> MISC_FEATURE
<222> (130)..(130)
<223> where X is a stop encoded by TAG

<400> 240

Met Lys Gln Ser Thr Ile Ala Leu Leu Pro Leu Leu Phe Thr Pro Val
1 5 10 15

Thr Lys Ala Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro
20 25 30

Cys Lys Ala Glu Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu
35 40 45

Cys Gln Thr Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe
50 55 60

Lys Ser Ala Glu Asp Cys Met Arg Thr Cys Gly Gly Ala Ala Glu Gly
65 70 75 80

Asp Asp Pro Ala Lys Ala Ala Phe Asn Ser Leu Gln Ala Ser Ala Thr
85 90 95

Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val Val Ile Val Gly Ala
100 105 110

Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe Thr Ser Lys Ala Ser Xaa
115 120 125

Xaa Xaa
130

<210> 241
<211> 12
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 241
ggaggaaata aa 12

<210> 242
<211> 543
<212> DNA
<213> Artificial sequence

<220>
<223> synthetic oligonucleotide

<400> 242
ggaggaaata aactgttgac aattaatcat cggctcgtat aatgtgtgga attgtgagcg 60
ctcacaattg agctccatgg gagaaaataa aatgaaacaa agcacgatcg cactcttacc 120
gttactgttt acccctgtga caaaagcccg tccggatttc tgtctcgagc caccatacac 180
tgggccctgc aaagcgcgca tcatccgcta tttctacaat gctaaagcag gcctgtgcca 240
gacctttgta tacgggtggtt gccgtgctaa gcgtaacaac tttaaatacg ccgaagattg 300
catgcgtacc tgcggtggcg ccgctgaagg tgatgatccg gccaaaggcg ccttcaattc 360
tctgcaagct tctgctaccg agtatattgg ttacgcgtgg gccatggtgg tggttatcgt 420
tggtgctacc atcgggatca aactgttcaa gaagtttact tcgaaggcgt cttaatgata 480
gggttaccag tctaagcccg cctaatagagc gggctttttt tttatcgaga cctgcaggtc 540
gac 543

<210> 243
<211> 485
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<220>

<221> misc_feature

<222> (485)..(485)

<223> Xaa can be any naturally occurring amino acid

<400> 243

Met Lys Lys Leu Leu Phe Ala Ile Pro Leu Val Val Pro Phe Tyr Ser
1 5 10 15

Gly Ala Arg Pro Asp Phe Cys Leu Glu Pro Pro Tyr Thr Gly Pro Cys
20 25 30

Lys Ala Arg Ile Ile Arg Tyr Phe Tyr Asn Ala Lys Ala Gly Leu Cys
35 40 45

Gln Thr Phe Val Tyr Gly Gly Cys Arg Ala Lys Arg Asn Asn Phe Lys
50 55 60

Ser Ala Glu Asp Cys Met Arg Thr Cys Gly Gly Ala Gly Ala Ala Glu
65 70 75 80

Thr Val Glu Ser Cys Leu Ala Lys Pro His Thr Glu Asn Ser Phe Thr
85 90 95

Asn Val Trp Lys Asp Asp Lys Thr Leu Asp Arg Tyr Ala Asn Tyr Glu
100 105 110

Gly Cys Leu Trp Asn Ala Thr Gly Val Val Val Cys Thr Gly Asp Glu
115 120 125

Thr Gln Cys Tyr Gly Thr Trp Val Pro Ile Gly Leu Ala Ile Pro Glu
130 135 140

Asn Glu Gly Gly Gly Ser Glu Gly Gly Gly Ser Glu Gly Gly Gly Ser
145 150 155 160

Glu Gly Gly Gly Thr Lys Pro Pro Glu Tyr Gly Asp Thr Pro Ile Pro
165 170 175

Gly Tyr Thr Tyr Ile Asn Pro Leu Asp Gly Thr Tyr Pro Pro Gly Thr
180 185 190

Glu Gln Asn Pro Ala Asn Pro Asn Pro Ser Leu Glu Glu Ser Gln Pro
195 200 205

Leu Asn Thr Phe Met Phe Gln Asn Asn Arg Phe Arg Asn Arg Gln Gly
210 215 220

Ala	Leu	Thr	Val	Tyr	Thr	Gly	Thr	Val	Thr	Gln	Gly	Thr	Asp	Pro	Val	
225						230				235					240	
Lys	Thr	Tyr	Tyr	Gln	Tyr	Thr	Pro	Val	Ser	Ser	Lys	Ala	Met	Tyr	Asp	
				245					250					255		
Ala	Tyr	Trp	Asn	Gly	Lys	Phe	Arg	Asp	Cys	Ala	Phe	His	Ser	Gly	Phe	
			260					265					270			
Asn	Glu	Asp	Pro	Phe	Val	Cys	Glu	Tyr	Gln	Gly	Gln	Ser	Ser	Asp	Leu	
		275					280					285				
Pro	Gln	Pro	Pro	Val	Asn	Ala	Gly	Gly	Gly	Ser	Gly	Gly	Gly	Ser	Gly	
	290					295					300					
Gly	Gly	Ser	Glu	Gly	Gly	Gly	Ser	Glu	Gly	Gly	Gly	Ser	Glu	Gly	Gly	
305					310					315					320	
Gly	Ser	Glu	Gly	Gly	Gly	Ser	Gly	Gly	Gly	Ser	Gly	Ser	Gly	Asp	Phe	
				325					330					335		
Asp	Tyr	Glu	Lys	Met	Ala	Asn	Ala	Asn	Lys	Gly	Ala	Met	Thr	Glu	Asn	
			340					345					350			
Ala	Asp	Glu	Asn	Ala	Leu	Gln	Ser	Asp	Ala	Lys	Gly	Lys	Leu	Asp	Ser	
		355					360					365				
Val	Ala	Thr	Asp	Tyr	Gly	Ala	Ala	Ile	Asp	Gly	Phe	Ile	Gly	Asp	Val	
	370					375					380					
Ser	Gly	Leu	Ala	Asn	Gly	Asn	Gly	Ala	Thr	Gly	Asp	Phe	Ala	Gly	Ser	
385					390					395					400	
Asn	Ser	Gln	Met	Ala	Gln	Val	Gly	Asp	Gly	Asp	Asn	Ser	Pro	Leu	Met	
				405					410					415		
Asn	Asn	Phe	Arg	Gln	Tyr	Leu	Pro	Ser	Leu	Pro	Gln	Ser	Val	Glu	Cys	
			420					425					430			
Arg	Pro	Phe	Val	Phe	Ser	Ala	Gly	Lys	Pro	Tyr	Glu	Phe	Ser	Ile	Asp	
		435					440					445				
Cys	Asp	Lys	Ile	Asn	Leu	Phe	Arg	Gly	Val	Phe	Ala	Phe	Leu	Leu	Tyr	
	450					455					460					
Val	Ala	Thr	Phe	Met	Tyr	Val	Phe	Ser	Thr	Phe	Ala	Asn	Ile	Leu	Arg	
465					470					475					480	

Asn Lys Glu Ser Xaa
485

<210> 244
<211> 8
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 244

Pro Cys Val Ala Met Phe Gln Arg
1 5

<210> 245
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 245

Pro Cys Val Gly Phe Phe Ser Arg Tyr
1 5

<210> 246
<211> 9
<212> PRT
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<220>
<223> synthetic peptide

<400> 246

Pro Cys Val Gly Phe Phe Gln Arg Tyr
1 5

<210> 247
<211> 9
<212> PRT
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<220>
<223> synthetic peptide

<400> 247

Pro Cys Val Ala Met Phe Pro Arg Tyr
1 5

<210> 248
<211> 9
<212> PRT
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<220>
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<400> 248

Pro Cys Val Ala Ile Phe Pro Arg Tyr
1 5

<210> 249
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 249

Pro Cys Val Ala Ile Phe Lys Arg Ser
1 5

<210> 250
<211> 9
<212> PRT
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<220>
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<400> 250

Pro Cys Ile Ala Phe Phe Pro Arg Tyr
1 5

<210> 251
<211> 9
<212> PRT
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<220>
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<400> 251

Pro Cys Ile Ala Phe Phe Gln Arg Tyr
1 5

<210> 252
<211> 9
<212> PRT
<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 252

Pro Cys Ile Ala Leu Phe Lys Arg Tyr
1 5

<210> 253

<211> 15

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic oligonucleotide

<400> 253

Ala Ala Ala Gly Cys Gly Cys Gly Cys Ala Thr Cys Ala Thr Cys
1 5 10 15

<210> 254

<211> 5

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 254

Lys Ala Arg Ile Ile
1 5

<210> 255

<211> 5

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 255

Met Gly Phe Ser Lys
1 5

<210> 256

<211> 5

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 256

Met Ala Leu Phe Lys
1 5

<210> 257
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 257

Phe Ala Ile Thr Pro
1 5

<210> 258
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 258

Met Ala Leu Phe Gln
1 5

<210> 259
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 259

Met Ala Ile Ser Pro
1 5

<210> 260
<211> 4
<212> PRT
<213> Artificial sequence

<220>
<223> synthetic peptide

<400> 260

Leu Lys Lys Ser
1

<210> 261
<211> 5
<212> PRT
<213> Artificial sequence

<220>

<223> synthetic peptide

<400> 261

Leu Ser Ser Ser Gly
1 5